

Notes - Solving Rational Equations (9-6)

Hints: * Use the LCM to clear the fraction

• If left with a quadratic \rightarrow try factoring and zero product property

$$\text{Ex 1: } 12x \left(\frac{2}{x} + \frac{1}{4} \right) = \left(\frac{1}{3} \right) 12x \quad \Rightarrow \quad \overset{12x \cdot \frac{2}{x}}{24} + \overset{12x \cdot \frac{1}{4}}{3x} = \overset{\frac{1}{3} \cdot 12x}{4x}$$

$$\text{LCM} = 12x$$

$$24 = x$$

$$\text{Ex 2: } \overset{28(x+2)}{\left(\frac{9}{28} + \frac{3}{x+2} \right)} = \left(\frac{3}{4} \right) \overset{7}{28(x+2)}$$

$$\text{LCM} = 28(x+2)$$
$$9(x+2) + 28 \cdot 3 = 3 \cdot 7 \cdot (x+2)$$

$$9x + 18 + 84 = 21x + 42$$

$$9x + 102 = 21x + 42$$

$$\begin{array}{r} -9x \quad -42 \quad -9x \quad -42 \\ \hline \end{array}$$

$$\frac{60}{12} = \frac{12x}{12}$$

$$x = 5$$

HW: p. 509 # 11-14

Ex 3: $r + \frac{r^2 - 5}{r^2 - 1} = \frac{r^2 + r + 2}{r + 1}$

LCM = $(r-1)(r+1)$

$(r-1)(r+1) \left(r + \frac{r^2 - 5}{(r-1)(r+1)} \right) = \left(\frac{r^2 + r + 2}{r+1} \right) (r-1)(r+1)$

$r(r^2 - 1) + r^2 - 5 = (r^2 + r + 2)(r-1)$

$r^3 - r + r^2 - 5 = r^3 - r^2 + r^2 - r + 2r - 2$

$\cancel{r^3} + r^2 - r - 5 = \cancel{r^3} + r - 2$
 $-r + 2 \quad -r^3 - r + 2$

$r^2 - 2r - 3 = 0$

$-3 \mid -2$

$(r-3)(r+1) = 0$

$(r=3)$ ~~X~~

extraneous solution

CW: p. 509 #4-7

	r^2	r	2
r	r^3	r^2	$2r$
-1	$-r^2$	$-r$	-2